

Name: _____ Date: _____

Macromolecules Worksheet



Carbohydrates

1) Name four important roles of carbohydrates.

- i. _____ ii. _____
- iii. _____ iv. _____

2) What is the most common monosaccharide? Why is this monosaccharide so important to our daily functioning?

3) What is the name of the process resulting in disaccharide formation? What specifically happens in this reaction?

Lipids

1) How are lipids defined? In what type of solvent are they soluble or insoluble? What are their functions in the body?

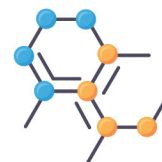
2) What is the length range of a triglyceride? How are glycerol and fatty acids "connected" to make a triglyceride?

3) Compare and contrast unsaturated fatty acids with saturated fatty acids.

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Carbohydrates

Answers

1) Name four important roles of carbohydrates.

- | | |
|----------------------------------|-----------------------------------|
| i. <u>lipid (triglyceride)</u> | ii. <u>Structure (cell walls)</u> |
| iii. <u>lipid (triglyceride)</u> | iv. <u>Cell identification</u> |

2) What is the most common monosaccharide? Why is this monosaccharide so important to our daily functioning?

Glucose. It is needed for cellular respiration to make ATP's.

3) What is the name of the process resulting in disaccharide formation? What specifically happens in this reaction?

Dehydration synthesis. Two monomers are joined by removing OH^- from one and H^+ from the other to produce H_2O .

Lipids

1) How are lipids defined? In what type of solvent are they soluble or insoluble? What are their functions in the body?

Lipids are nonpolar macromolecules. They are soluble only in nonpolar solvents and insoluble in water or other polar solvents.

Fats & oils: energy storage, insulation, protection, waterproofing

Phospholipids: plasma membranes, steroids

Cholesterol: steroid hormones

2) What is the length range of a triglyceride? How are glycerol and fatty acids "connected" to make a triglyceride?

16, 18, and 20 are the most common. Ester bonds connect them via dehydration synthesis.

3) Compare and contrast unsaturated fatty acids with saturated fatty acids.

Both are triglycerides

Unsaturated: at least one double carbon bond in fatty acids ($\text{C}=\text{C}$); liquid at room temperature.

Saturated: all single carbon bonds ($\text{C}-\text{C}$) with 2 hydrogens attached to each carbon; saturated with hydrogen.